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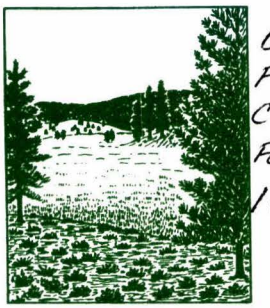
FOREST RESEARCH NOTES

CALIFORNIA FOREST AND RANGE EXPERIMENT STATION
KEITH ARNOLD, DIRECTOR

U.S. DEPARTMENT OF AGIRCULTURE - FOREST SERVICE



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No. 142 August 1958

CALIFORNIA CONE CROP--1958

Gilbert H. Schubert, Forester,
Division of Forest Management Research

California forest trees are expected to produce a good cone crop in only a few localities this year. Generally the crop is rated as medium or less, with no crops or poor crops as frequent as fair ones. A medium or heavy crop is indicated in some seed zones; however, even in these zones the crop will vary considerably in different parts. Heavy crops were indicated for Douglas-fir, white fir, and sugar pine in seed zones IV and V; for Jeffrey pine in zone IV; and redwood in zone XIII.

These are the main conclusions from a study of the cone-crop reports sent to the California Forest and Range Experiment Station by members of the California Division of Forestry, the California Region of the U. S. Forest Service, the Southern California Edison Company, and members of the experiment station.

The reports were generally based on occular estimates in which the crop was rated as none, very light, light, medium, or heavy, according to the cone crop classification used in Oregon. 1/ In this classification the cone crop ratings are:

1. None--no cones on any trees or few cones on occasional trees.

2. Very light--few cones on 25 percent of the trees, or few cones on 25 percent of the trees and many cones on occasional trees.

3. Light--few cones on 75 percent of the trees, or many cones on some trees and few cones on 75 percent of the trees.

4. Medium--some cones on all trees, or many cones on less than 75 percent of the trees.

5. Heavy--many cones on 75 percent of the trees and some cones on all trees, or many cones on all trees.

1/ Engstrom, W. H. Oregon cone crop, 1954. Oregon State Board of Forestry. Res. Note 16, 7 pp., 1954.

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Although these ratings are subjective, they provide valuable information for those planning to collect seed this fall.

Several of the cone crops in seed zones IV and V were rated by the cone crop index devised by Fowells and Schubert. 2/ This index contains 5 classes of crops based on the average number of cones on dominant ponderosa pine, sugar pine, and white fir trees larger than 19.5 inches in diameter.

	Cones per dominant tree larger than 19.5 inches d.b.h.	
	Ponderosa pine	Sugar pine or white fir
Cone crop rating:		
None	0	0
Light	1-20	1-10
Medium	21-80	11-40
Heavy	81-160	41-80
Very heavy	161 or more	81 or more

As an aid to seed collectors, the crop reports have been segregated according to the forest tree seed collection zones described by Fowells. 3/ This grouping (table 1), showed that the most promising localities for collecting seed of major commercial conifers--those with medium to heavy cone crops--were as follows:

	Seed zone
Incense-cedar	II, IV, V, and IX
Douglas-fir	II, III, IV, V, X, XI, XII, and XIII
California red fir	III, V, and X
White fir	I, II, III, IV, V, VII, VIII, and X
Jeffrey pine	I, IV, V, VIII, IX, and XIII
Ponderosa pine	I, IV, V, and XIII
Sugar pine	I, II, III, IV, V, VIII, and X
Giant sequoia	IV
Redwood	XIII

A map of the collection zones is appended to this note, but since the seed crop is spotty and varies widely in most zones, it is also advisable to consult field offices of the California Division of Forestry or the U. S. Forest Service to determine best areas to collect cones.

2/ Fowells, H. A. and Schubert, G. H. Seed crops of Forest trees in the Pine Region of California. U. S. Dept. Agr. Tech. Bul. 1150, 48 pp., illus., 1956.

3/ Fowells, H. A. Forest tree seed collection zones in California. Calif. Forest and Range Expt. Sta. For. Res. Note 51, 5 pp., illus. 1946.

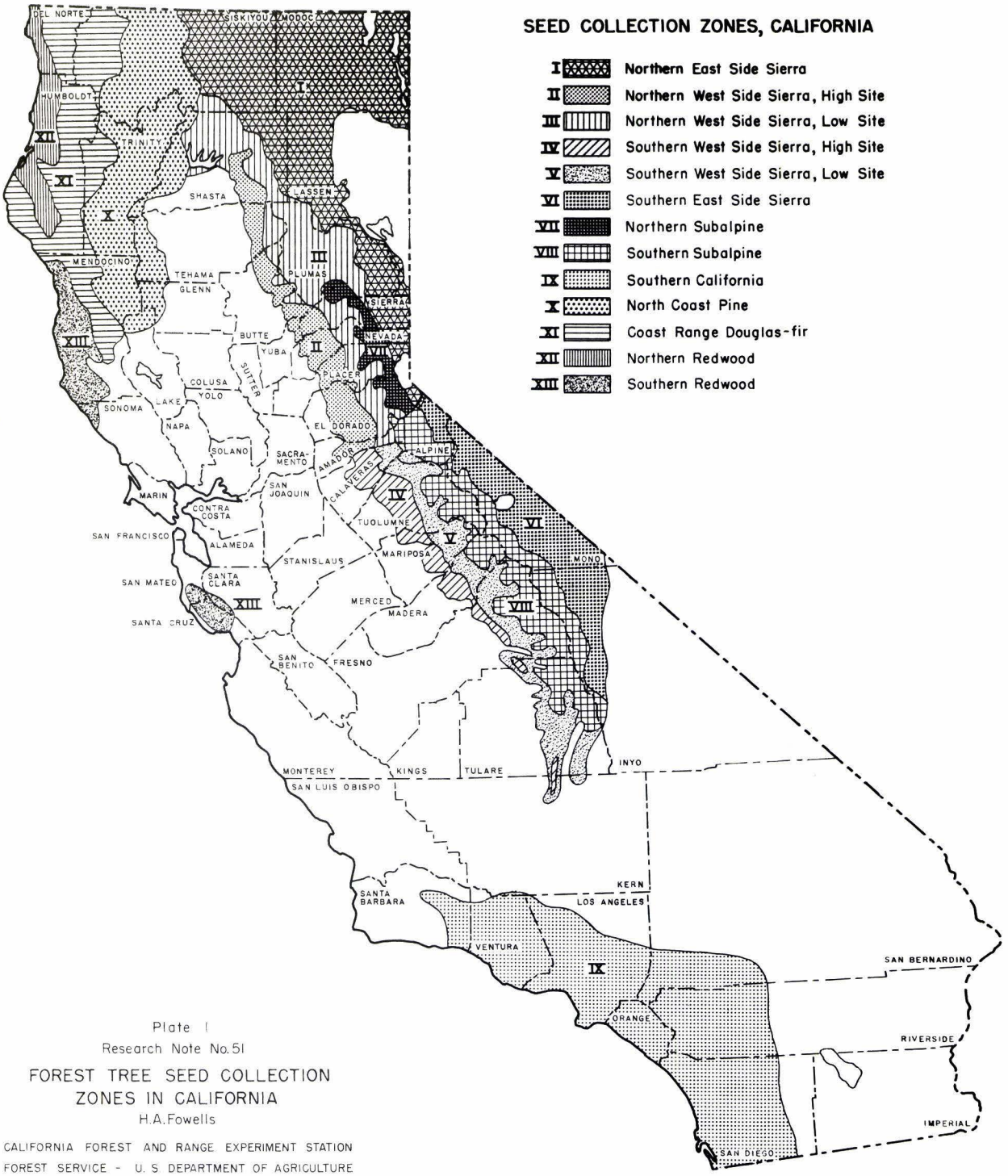

Plate I

Research Note No. 51

FOREST TREE SEED COLLECTION ZONES IN CALIFORNIA

H.A. Fowells

CALIFORNIA FOREST AND RANGE EXPERIMENT STATION

FOREST SERVICE - U. S. DEPARTMENT OF AGRICULTURE

Table 1.--Summary of cone crops by species and seed zone, California, 1958

Species	Seed collection: zone or county	Cone crop 1/
CEDAR:		
Incense-cedar (Libocedrus decurrens)	I	None
	X	None to very light
	III	None to light
	II, IV, IX	None to medium
	VIII	Light
	V	Very light to medium
CYPRESS:		
Tecate cypress (Cupressus guadalupensis)	IX	Light
DOUGLAS-FIR:		
Bigcone Douglas-fir (Pseudotsuga macrocarpa)	IX	None
Douglas-fir (P. menziesii)	I	None to light
	XI, XII	None to medium
	Lake, Napa	Very light to light
	II, III, XIII	Very light to medium
	IV, V	Very light to heavy
	X	Light to medium
FIR:		
Bristlecone fir (Abies bracteata)	XIII	Medium
California red fir (A. magnifica)	I, II	None to very light
	VII	None to light
	III, X	None to medium
	V	Very light to medium
	VIII	Light

1/ Reported by technicians of the California Division of Forestry, the California Region of the U. S. Forest Service, the California Forest and Range Experiment Station, and the Southern California Edison Company

Species	Seed collection: zone or county	Cone crop 1/
FIR: (continued)		
Lowland white fir (A. grandis)	XI, XII	None
	XIII	Light
White fir (A. concolor)	II, III	None to medium
	IX	Very light
	I, VII, X	Very light to medium
	IV, V	Very light to very heavy
	VIII	Light to medium
PINE:		
Bishop pine (Pinus muricata)	X, XII	None
	XIII	Light
Coulter pine (P. coulteri)	IX, XIII	Very light to medium
	Santa Clara	Light
Jeffrey pine (P. jeffreyi)	II, III	None to very light
	X	None to light
	I	None to medium
	VII	Very light
	V, VIII, IX	Very light to medium
	IV	Very light to heavy
	XIII	Medium
Knobcone pine (P. attenuata)	I, III, IX, X, XI, XIII	Light to medium
Lodgepole pine (P. contorta)	XII	None
	I, IV, V, XIII	None to light
Monterey pine (P. radiata)	XIII	Light
Ponderosa pine (P. ponderosa)	VII, XI, Lake, Napa	None
	III	None to very light
	II, VIII, IX, X	None to light
	I	None to medium
	Santa Clara	Very light
	IV, V, XIII	Very light to medium

Species	Seed collection zone or county	Cone crop 1/
PINE: (continued)		
Sugar pine (P. lambertiana)	VII, XIII, Lake, Napa	None
	I, II, III, X	None to medium
	IX	Very light to light
	V	Very light to very heavy
	IV	Light to very heavy
	VIII	Medium
Western white pine (P. monticola)	I, VII, VIII	None to medium
SEQUOIA:		
Giant sequoia (Sequoia gigantea)	V	Very light
	IV	Very light to medium
Redwood (S. sempervirens)	XII	Very light
	XIII	Very light to heavy